

STATUS OF PENDING CLAIMS

Claims 1-26 (Canceled)

27. (Currently amended) A method of detecting an amplification reaction comprising:

(a) hybridizing a circular primer to a target nucleic acid to form a hybridization complex;

(b) contacting said hybridization complex with a ligase [first enzyme] that causes modification of said circular primer to form a circularized probe;

(c) contacting said circularized probe with a first amplification primer and a second enzyme whereby a concatamer amplicon is formed;

(d) cleaving said concatamer amplicon forming amplicon cleavage products;

(e) contacting said amplicon cleavage products with an array comprising:

(i) a substrate with a surface comprising discrete sites; and

(ii) a population of microspheres comprising at least a first subpopulation comprising a first capture probe; wherein said microspheres are randomly distributed on said surface; and

(f) detecting said cleavage products.

28. (Currently amended) The method according to claim 27, whereby said circular primer:

hybridizes at its 5' end to said target sequence and at its 3' end immediately adjacent to said 5' end to form

B5

said first hybridization complex[; whereby said first enzyme is a ligase] and said 5' end and said 3' end are ligated forming said circular probe.

29. (Previously presented) The method according to claim 27, wherein the 3' terminal nucleotide of said circular primer is complementary to a first detection position of said target nucleic acid.

30. (Previously presented) The method according to claim 28, wherein said second enzyme is a polymerase.

35
b.d.t.
31. (Previously presented) The method according to claim 27, wherein c) further comprises providing labeled nucleotides whereby said concatamer amplicon is labeled.

32. (Previously presented) The method according to claim 27, wherein d) comprises contacting said concatamer amplicon with a third enzyme wherein said third enzyme is a restriction endonuclease forming said cleavage products.

33. (Previously presented) The method according to claim 27, wherein said discrete sites are wells.

34. (Previously presented) The method according to claim 27, wherein said substrate is a fiber optic bundle.

35. (Previously presented) The method according to claim 27, wherein said substrate is selected from the group consisting of glass and plastic.

36. (Previously presented) The method according to claim 27, wherein said population of microspheres is randomly distributed in said wells.

37. (Currently amended) The method according to claim 27, wherein said circular primer [probe] further comprises an adapter sequence.

38. (Currently amended) The method according to claim 27, wherein said circular primer [probe] further comprises a restriction cleavage site.

39. (Previously presented) The method according to claim 27, wherein said circular primer comprises:

- a) a first target specific portion;
- b) a second target specific portion;
- c) an amplification priming site;
- d) an adapter sequence; and
- e) a restriction site.

40. (Previously presented) The method according to claim 39, wherein said adapter sequence is substantially complementary to said capture probe.

41. (Previously presented) The method according to claim 39, wherein said first target specific portion is at the 5' terminus of said circular primer and said second target specific portion is at the 3' terminus of said circular primer.

42. (Previously presented) The method according to claim 27 whereby said circular primer hybridizes at its 5' end to said target nucleic acid and at its 3' end to said target nucleic acid wherein said 3' end is not immediately adjacent to said 5' end, forming said first hybridization complex, whereby said method further comprises prior to step b), contacting said hybridization complex with a polymerase such that the 3' end of said circular primer is extended such that it is immediately adjacent to said 5' end.

BS
COD 4.
43. (New) A method of detecting an amplification reaction comprising:

(a) hybridizing a circular primer to a target nucleic acid to form a hybridization complex, said target nucleic acid being attached to a solid support;

(b) contacting said hybridization complex with a ligase [first enzyme] that causes modification of said circular primer to form a circularized probe;

(c) contacting said circularized probe with a first amplification primer and a second enzyme whereby a concatamer amplicon is formed;

(d) cleaving said concatamer amplicon forming amplicon cleavage products;

(e) contacting said amplicon cleavage products with an array comprising:

(i) a substrate with a surface comprising discrete sites; and

Inventors: C. et al.
Serial No.: 10/021,906
Filed: December 12, 2001
Page 9

B5
cont.
(ii) a population of microspheres comprising at least a first subpopulation comprising a first capture probe; wherein said microspheres are randomly distributed on said surface; and

(f) detecting said cleavage products.
